Notes from the 03/07/06 MI BPM Upgrade Meeting
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These notes can be found in Beams docDB #1526.

Agenda as announced:

Project Announcements
Beam Instrumentation Workshop abstracts (March 15 deadline)
MI BPM Installation and Commisioning
Marv: Locations in racks
Measurements in MI40 with injected signals
Peter, Marv.
Hardware status:
Combiner Board status, plan for final installation
Transition Board: bids, filters, delivery, checkout and testing.
Transition Board I/O status
Timing Board
Cables, crates, other.
Software status:
Front-end software
Online software
Validation
AOB

0. Project Announcements

- Rob Kutschke's talk is scheduled for the All Experimenter's Meeting on April 3. Be there!

- The project will work on submitting an abstract to the Beams Instrumentation Workshop describing the upgrade and how it is capable of providing measurements for the fairly complicated Main Injector.

- The weekly MI BPM meeting on March 14 will be in the Cooler. Reminders will be sent out as we get closer to that date.

1. MI BPM Installation and Commisioning
Marv: Locations in racks

- Marv showed some rack layouts for MI10-50 and MI60S and MI60N. These can be found in beams-doc-1822-v2. (Detailed rack configurations for BPMs installed first, BLMs installed first, and the final configuration (Proposed rack Layouts detailed.xls, 127.0 kB))

- Jonathan Lewis came and kindly gave a status of the new BLM electronics. Preproduction is this week, 1 week for approval, 6 weeks

for production, test boards in May.

- We had a long discussion about the different options that are available for installation of the new system, including the BLM installation. There is a connection due to the fact that rack space is shared and the old BLM and BPM systems use the same readout hardware.

- One decision that was made is that we should come out of the shutdown with the MI40 house configured as follows: The new BPM hardware will be installed in the left-most rack of the BPM racks (rack 116) and will be connected to the 11 house 44 BPMs. The other two houses will remain connected to the old electronics. The new BLM system will be installed in the middle rack (rack 115) and will be connected to all of the BLMs in MI40.

- The rest of the time was devoted to discussing possible installation options that require the least amount of physical movement of equipment in the 3 racks in each service building. Also to satisfy the requirements of the Main Injector startup. The beam must be established and tuned up before major installation of new BPMs is to proceed, etc.

- It looks like it will take 1 day to install a whole building with BPM or BLM equipment. It probably makes most sense to replace everything in a building at once though it may not fit into a detailed plan given all of the constraints and uncertainties.

- We agreed to get together again in about a month (early April) to continue the discussion. There will be more information about the status of the Main Injector, the BLM hardware, and the BPM hardware.

- The official date of MI restart is May 24. Add about 2 weeks to get the beam running and tuned up.

- Marv will update the 7 location drawings with proposed final hardware locations.

- Brian is ready for most options of installation of the BPM and BLM systems.

2. Measurements in MI40 with injected signals
Peter, Marv.

- Peter showed some measurements that came from the work that he and Marv did on Monday to inject 53 MHz split signals into the output of the combiner boxes in the tunnel.

- Peter showed a table that gives the measurements expected with and without offsets applied. Without offsets one would expect 0 (since the input signal is balanced) but it was not 0 in all cases. In some cases the offset was as large as a few mm. This could be due to cable mis-match, transition board channel mismatch, connector/connection problems, etc.

- Work will continue to track down the possible source of the offset and Peter will report the results next time.

- On a related topic Bob reported on some measurements that have been done that allow us to detect opens between the combiner box and the pickups. The shape of the reflected signal give unambiguous signatures depending on whether both channels are properly connected, one is open or both are open. This will be used to check for problems, especially the famous BMP 127.

3. Hardware status:
   Combiner Board status, plan for final installation
   Transition Board bids
   Transition Board I/O status
   Timing Board
   Cables, crates, other.

- 30 combiner boxes are ready to install and will be installed soon. The remainder will be installed as the next set of boxes are built and after the new quads go in. The quads will be installed starting in about a week and about one per week will be installed.

- The order for the transition board fabrication was placed on Friday. The first 3 items will be built and delivered in about 4 weeks. These will be tested (after the filters are installed) and once everything looks good the full order of boards will be fabricated.

- A test suite for the transition board is being developed and something should be ready by the time the first boards arrive.

- The VME backplanes should be ordered. Bob is still working with Stefano and others on the final specs and the order should be placed soon.

- Stefano is working on the new design. He showed his schedule for the new design (see his contribution in beams-doc-1526 for details.) The work is on schedule, all modules should be available on May 15.

- A problem was found in the timing board and it was traced to changes made to accommodate delays up to about 3.5 turns. The code has since been fixed. Marv and Bob found the problem.

- 6 timing boards are ready to go. 5 boards have some problems with the FPGA connection to the board and these will be repaired.

- There are still cables left to be delivered. The company will be contacted.

4. Software status:
   Front-end software
   Online software

- A change was made to allow the offsets to be enabled or disabled.

- A rare bug was fixed that caused a first point to be missed in some special cases.

- All of the PMC UCD cards have been tested.

- Working on making flash buffers dynamic instead of static to save memory.

- Still need to work on alarms.

- Most of the work requested and required for the online system is finished or ready.

5. AOB

- Some discussion of the kicker noise and how to test it during the shutdown.